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Jakub Tomasz NOWAKOWSKI

**Studia nad muchówkami minującymi z rodziny
Agromyzidae (Diptera). 1. Nowy gatunek *Phytomyza*
FALL. na *Pulsatilla* MILL.**

**Исследования над минирующими двукрылыми из семейства
Agromyzidae (Diptera). 1. Новый вид *Phytomyza* FALL. на
Pulsatilla MILL.**

**Studies on mining flies (Diptera, *Agromyzidae*). 1. A new
species of *Phytomyza* FALL. on *Pulsatilla* MILL.**

[With 6 text-figures]

In his work on leaf mines (1935—1937) Martin HERING called attention to our insufficient knowledge of mining insects, the larvae of which feed on plants of the family *Ranunculaceae*. Considerable progress has been made since by the discovery of a number of new species, as well as by the elucidation of the ecology of forms previously known merely by their final instars. Nevertheless, there is a substantial body of systematic and ecological problems still awaiting elucidation.

The endoparasites of the *Ranunculaceae* are chiefly represented by mining flies (*Diptera*, *Agromyzidae*) and by saw flies (*Hymenoptera*, *Tenthredinidae*); they show particularly high food specialization. A large majority are monophagous species, and only a few are to some extent oligophagous within

very narrow limits of closely related botanical genera. This indicates a greatly advanced protein differentiation within the phylogenetically old family *Ranunculaceae*. Choice of hosts by leaf miners provides in itself no ultimate proof of relation between plants, yet it testifies to the affinity of proteins which are almost the exclusive food of these phytophagous insects, and, consequently, may be of equal significance in systematic botany like serum diagnosis (HERING, 1951).

A particularly interesting object in the research on food specialization is presented by the parasites of *Anemone* L. Hitherto, the exact limits of this plant genus have not been definitely established by botanists. Some of them advance a broader concept, dividing it in three sections or subgenera: *Anemone* L., s. str., *Hepatica* MILL. and *Pulsatilla* MILL., while others regard them as three distinct genera. The choice of food on the part of the mining insects would appear to favour the latter view, since each of the three groups of plant species has its own parasites among the *Agromyzidae* and *Tenthredinidae*, which are not found on species belonging to either of the remaining two groups.

The leaves of *Pulsatilla* MILL. are mined by *Phytomyza rectae pulsatillae* HER. which has never been reared from the leaves of *Anemone* L., s. str. However, other mines of a *Phytomyza* spec. are known to occur on *Pulsatilla* MILL., which resemble the mines of *Ph. narcissiflorae* HER. on *Anemone narcissiflora* L. (HERING, 1935, Nr. 196, Fig. 69 b). As long as the insect causing these mines was not identified, a suspicion could exist that *Anemone* L., s. str. and *Pulsatilla* MILL. may have at least one mining species in common.

While investigating the fauna and ecology of *Agromyzidae* in the Kampinos Forest near Warszawa, I collected in 1955—1956 a large number of leaves of *Pulsatilla pratensis* (L.) MILL. and *P. patens* (L.) MILL. damaged by an unknown form of mining fly referred to above. From the larvae feeding on *Pulsatilla pratensis* (L.) MILL. I succeeded in rearing the adults. Having examined the imagines and larvae I became convinced that this form is a distinct species. Since it appears only on species of *Pulsatilla* MILL. belonging to the section *Campanaria* ENDLICHER I name it

Phytomyza campanariae sp. n.

Imago

Head [fig. 1]. Frons with parallel margins, about as wide as long if measured from *vti* to the basis of the antenna. Frontal orbits visible from the profile, set off against the frontal vitta.

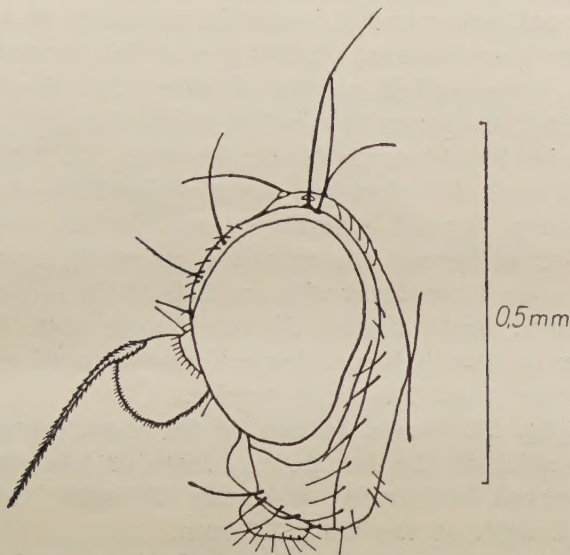


Fig. 1. *Phytomyza campanariae* sp. n. Head of a male (holotype).

Width of an orbit about equal to $\frac{1}{4}$ of the width of the frons; from the *ors* the orbit gradually tapers into the cheek. Lunula higher than a semicircle and exceeds the height of the frons between it and the anterior ocellus. Ocelli-triangle right- or slightly obtuse-angled at the front, with the posterior side shorter than $\frac{1}{3}$ of the width of the frons. Three fronto-orbital bristles. Posterior *ors* absent, the anterior one retroflexed, inserted in or just behind the middle of the distance between *vti* and the basis of the antenna. Two *ori*. Posterior *ori* somewhat shorter than *ors*, retroflexed and bent inwards, inserted nearer to the ocular margin than *ors*, just below the upper margin of the lunula and before $\frac{1}{3}$ of the distance between the basis of the antenna and *vti*, closer to the anterior *ori* than to *ors*.

Anterior *ori* equals up to half of the length of the posterior one, bent inwards, inserted above the upper margin of the antennal basis. Orbital hairs uniserial. *Oc* crossing *ors*. Cheek below the antenna almost linear, invisible from the profile. Jowl about $\frac{1}{3}$ of the height of the eye. Oral margin rather angular at the front, distinctly protruding when viewed from the profile. Bases of the antennae close to each other. Third antennal joint rounded quadratic, pubescent at the front. Arista longer than antenna, slightly broadening towards the basis. One *vi*, three curved peristomal hairs. Eye almost naked, perpendicularly oval from the profile, rarely circular in outline.

Thoracic bristles. 3+1 *dc*, growing shorter towards the front. Fourth *dc* before *prs. acr* standing in 3–4 irregular rows, reaching beyond second *dc*, occasionally almost to first *dc*. 1–2 *ia* beyond the suture. *i. pa* small, shorter than the half of *e. pa*. Mesopleura with one hair at the upper margin.

Abdomen. Sixth tergite slightly longer than the fifth. Basal joint of the oviscapt trapeziform in outline, obtuse, slightly longer than the sixth tergite.

Wing [fig. 2]. Second section of the costa (*c*) more than $1\frac{1}{2}$ the length of the fourth. r_{4+5} more or less straight, at the end curved antrorsally, distinctly diverging from m_{1+2} .

Size. Length of the wing 1,7 mm.

Coloration. Most of the body, including mesonotum and scutellum, dull-black, with dense grey suffusion. Frons, tibiae and tarsi and abdomen tinged with brown. Oral margin, the mesofacial carina and the jowl yellow. Knees yellow, lighter in the fore-legs. Margin of the noto- and mesopleural sutures, base of the wing, squamula and haltere whitish-yellow. Moreover, the narrow posterior margins of the tergites in the male, and the lateral angle of the basal part of the abdomen and the broad posterior margin of the sixth tergite in the female, are whitish-yellow in colour. Basal joint of the oviscapt dorsally dull over almost the proximal half, the rest shiny. Squamal fringe yellow. Wing transparent grey. Veins brown.

Male genitalia¹ [fig. 5]. Sclerites of the basal section of the aedeagus diverge towards the apex. The right sclerite,

¹ Terminology combined after SÉGUY (1934) and FRICK (1952).

connected by a triangular carina with the phallophore, is also provided latero-ventrally with a narrow carina. The left sclerite is bent at right angle and latero-ventrally has a very broad carina; its basal part being arcuate. Sclerites of the hypophallus feebly developed: two rod-like lateral ones and an arrow-shaped apical one. Paraphalli rod-like, curved in both planes, broadened vertically at the apex. Phallus single, club-shaped, apically provided with two diverging, S-shaped,

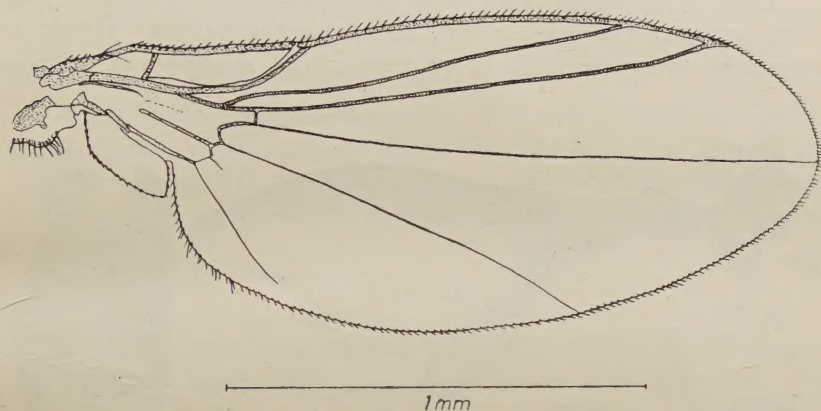


Fig. 2. *Phytomyza campanariae* sp. n. Wing of a female.

fusiform spikes. Ejaculatory apodeme shorter than hypandrium. Its blade broadened in the opposite direction to its basis. Bulbus ejaculatorius laterally stretched into two dark extensions.

Types comprise 22 specimens of imagines of the second generation reared from larvae mining the leaves of *Pulsatilla pratensis* (L.) MILL., which were collected in the Kampinos Forest near Warszawa in 1955–1956.

Holotype: ♂ emerged on 16 VIII 1956, the mine found on 20 VII 1956 on a dune at Łuże.

Allotype: ♀ emerged on 23 VII 1955, the mine found on 7 VII 1955 on a dune north of the reservation Granica.

Paratypes: 4 ♂♂ and 3 ♀♀ emerged in VII–VIII 1955, mines found in VII–VIII 1955 on the dunes north of the reservation Granica; one preparation of the male genitalia. 10 ♂♂

and 3 ♀♀ emerged in VIII 1956, mines found in VII 1956 on the dunes at Łuże; two preparations of the male genitalia.

Holotype and 19 paratypes are in the collection of the Institute of Zoology of the Polish Academy of Sciences, Warszawa. Allotype and one paratype are in the collection of Prof. Dr. E. M. HERING, Berlin-Dahlem.

Larva [fig. 3]

The fully developed larva of the third instar is about 2 mm long, robust, yellowish-white. Head region without cuticular processes. Creeping welts of prothorax and mesothorax narrow

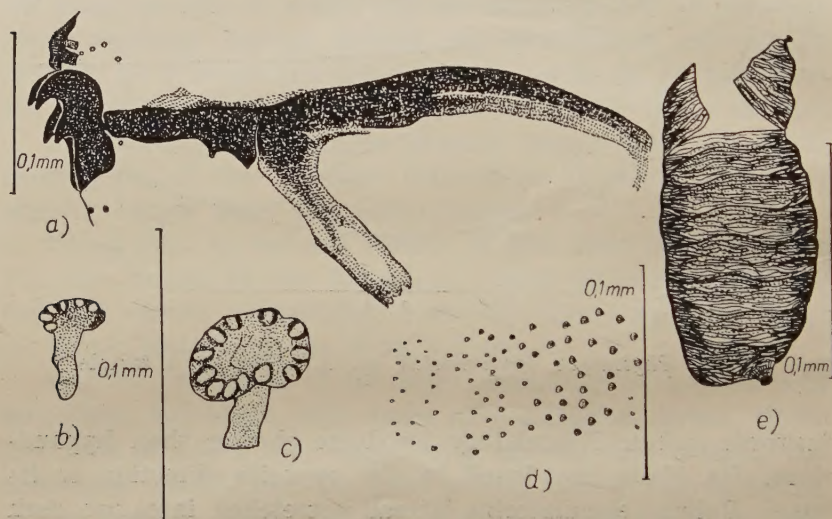


Fig. 3. *Phytomyza campanariae* sp. n. Larva: a) mouth hooks and cephalo-pharyngeal skeleton, b) anterior spiracle, c) posterior spiracle, d) cuticular processes, e) puparium.

and unclosed. Abdominal creeping welts very broad. Their cuticular processes forming 15–25 irregular rows. Cuticular processes dense, of equal shape, growing towards the back of the welt, circular at the base, seen from the side triangular in outline, with retroflexed points. Mandibles (mouth hooks) bidentate. Right mandible longer than the left. Longitudinal sclerite well developed. Labial sclerite of the cephalopharyngeal skeleton growing slightly wider posteriorly. Dorsal

process of paraclypeal phragma markedly developed (dorsal arm), arcuate, with a distinct vestige of the ventral arm. Ventral process more than half the length of the dorsal one. Both spiracles with bulbs arranged in an short oval. Anterior spiracle with 6 bulbs; its atrium longer than the oval formed by the bulbs. Posterior spiracle with 11—14 bulbs; its atrium about as long as the oval formed by the bulbs.

Puparium about 1,7 mm long, with slight rumples and distinct incisions. Immediately after pupation it is of grey coloration with an olive-green tinge, before the emergence of the imago — dark-brown, after the emergence, when empty — brown with an olive-green tinge.

Material: two preparations of larvae from the leaves of *Pulsatilla pratensis* (L.) MILL. collected in the Kampinos Forest, on 31 VII 1955, on a dune north of the reservation Granica, and on 20 VII 1956, on a dune at Łuże. 9 puparia.

Ecology

The mine of the larva was briefly described and illustrated by HERING (1935, Nr. 196, Fig. 69 b). The following were given as host plants: *Pulsatilla patens* (L.) MILL., *P. pratensis* (L.) MILL. and *P. vulgaris* MILL., all belonging to the section *Campanaria* ENDLICHER. The mines from the two first plants only are known to me; the third one does not grow in the Kampinos Forest.

The larva produces an upper surface leaf mine which is deep and of the blotch type [fig. 4]. When the maggot feeds, the upper wall of the mine-cavity bulges outward and the mine becomes blister-like in shape (physonome). Primary feeding tracks distinct, while the secondary ones are absent, since the blotch is orthogenous. The mine is dirty green when fresh and brown when dry. Its initial part, surrounding the place of oviposition, is marked by a dark-brown roundish spot caused by accumulation of liquid and solid constituents of the excrements of the larva. Also outside the spot dark grains of the frass can be seen irregularly dispersed in the mine-cavity. The arcuate exit slit is at the margin of the mine usually on the lower side of the leaf, more rarely on the upper one. The surface

of the mine of one larva exceeds 0,5 cm²; in the first (autumn) generation it is larger than in the second.

The mines are alike in both food-plants. There are, however, differences in their number and distribution owing to the different sizes and shapes of the leaves of the two species of *Pulsatilla* MILL. In the leaves of *Pulsatilla pratensis* (L.) MILL., broad but divided into narrow lobes, the mines are usually

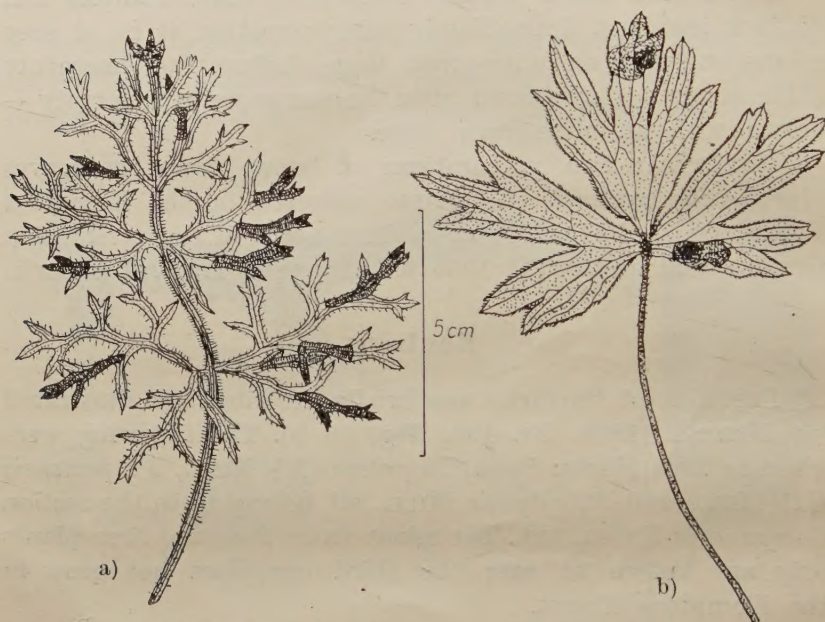


Fig. 4. *Phytomyza campanariae* sp. n. Mines: a) on *Pulsatilla pratensis* (L.) MILL., b) on *Pulsatilla patens* (L.) MILL.

more numerous (up to 10) and are produced by single larvae; they are invariably near the edge of the blade and usually in the apical portions of the lobes. In the more entire leaves of *Pulsatilla patens* (L.) MILL. the mines are less numerous (up to 5), but sometimes there are also cavities produced by several maggots jointly. The mines do not always touch the edge of the blades though they are usually found in the apical portions of the lobes.

The plant is attacked just after the spring period of blossoming and fruiting. The larvae feed only in the radical leaves,

since the stem leaves, being an involucre, die off in summer together with the whole flower-carrying stem. A plant attacked by the miner may have almost every leaf damaged in numerous places.

I found feeding larvae between July 7th and 31st, and later between September 29th and October 19th, which shows that there are two generations of the species within a year. The larval stage seems to last two weeks in the second generation and can be considerable longer in the first one according to the temperature of the environment. When reared in the laboratory the pupal stage of the second generation lasts 14–22 days, on the average 18 days, and the influence of the temperature also can be noticed. Pupation takes place usually outside the mine in the ground, but often the puparium remains inside the leaf near the exit slit. Imagines of the second generation emerged between July 26th and August 22nd. The male/female ratio in the material of 22 specimens showed a twofold preponderance of the males. The first generation hibernates in the pupal stage. Hitherto, the rearing of adults of this generation has not been successful.

I reared a hymenopterous parasite from one larva of *Ph. campanariae* sp. n. It was recognized by Dr. Max FISCHER (Wien) as a new species of *Opius* WESM. (*Braconidae*). The mining maggot which served as host pupated inside the leaf on July 2nd. On August 28th the adult hymenopteron emerged from the puparium. Such a slight parasite invasion of the reared material, taken during the various years and coming from the various sites, leads to the supposition that *Ph. campanariae* sp. n. is — in the investigated area at least — relatively little attacked by the *Terebrantes*.

Phytomyza campanariae sp. n. occurs in the Kampinos Forest on the dune terrace. I collected its numerous mines in the southern dune zone (near the reservation Granica), in the northern one (near Grochale, Cybulice and Krzywa Góra) and in the groups of dunes situated in the southern swamp zone (near Sieraków and Łuże). The miner attacks its hosts in the various acidophilous forest and dune plant communities. The two species of *Pulsatilla* MILL. here in question are heliophilous xerophytes, which represent the Pontic steppe

element in Central Europe (HEGI, 1912). They occur here in the dry and light pine- and pine-oak forests, particularly in young ones, on sunny slopes and sandy or stony hills. In the Kampinos Forest they grow predominantly on the southern slopes of the dunes, covered with scanty or young pine- or pine-oak forest, with clumps of shrubs or without any trees at all. According to phytosociological classification the habitats of *Ph. campanariae* sp. n. belong to three plant communities: mixed pine-oak forest (Pineto-Quercetum, KOZŁOWSKA, 1925) in the dune grass facies, dry and light; typical acidophilous pine forest (Pineto-Vaccinietum myrtilli, KOBENDZA, 1930) in the dune grass facies, and associations of xerophyte meadows (*Corynephorretalia canescentis*, TÜXEN, 1933).

Both species of flies mining the leaves of *Pulsatilla* MILL. occur in the biotopes referred to before, together with the saw-fly, *Pseudodineura parvula* KLUG. On the particular sites, however, always one of the species seems to predominate. According to HERING (1935) *Ph. rectae pulsatillae* HER. is more common. In the Kampinos Forest *Ph. campanariae* sp. n. seems to be more local, but on its stations it occurs in fairly great numbers.

Systematic position

Phytomyza campanariae sp. n. is clearly distinct from all known Agromyzid species. Its correct systematic position, however, can be determined only after drawing up the natural system of the species of the genus *Phytomyza* FALL. Out of the species, the male genitalia of which are known to me, the closest to *Ph. campanariae* sp. n. is *Ph. abdominalis* ZETT., a miner of *Hepatica* MILL. Here in particular the miners of *Anemone* L., s. str. must be taken into consideration, namely *Ph. narcissiflorae* HER. and *Ph. albimargo* HER., the genitalia of which are, however, unknown to me.

Determining the imago according to HENDEL'S key (1935—1936), we come to point 229 (p. 514)¹ which ought to be supplemented in the following way:

¹ The point 228 was supplemented by HERING, 1951, Not. Ent., Helsinki, 31:41.

229. Hintere *ors* fehlt ganz 229a
 —. Hintere *ors* $\frac{2}{3}$ — $\frac{3}{4}$ der vorderen lang 230
 229a. Lunula so hoch wie die Stirn darüber vor dem vordersten Ocellus. 2. Flügelrandabschnitt über 2 mal so lang wie der 4. Mesonotum und Scutellum glänzend pechschwarz. Schüppchen schwarzbraun gerandet und gewimpert. f_1 an der Spitze gelb, f_2 und f_3 rötlich (braungelb)
 *ranunculivora* HER.
 —. Lunula höher als die Stirn darüber vor dem vordersten Ocellus. 2. Flügelrandabschnitt unter 2 mal so lang wie der 4. Mesonotum und Scutellum mattgrau bereift. Schüppchen gelblich gewimpert. Alle f an der Spitze gelb
 *campanariae* sp. n.

Ph. ranunculivora HER. produces linear mines in the leaves of *Ranunculus* L. Hitherto, it was known from Carinthia (Austria) (HENDEL, 1935), from Northern Germany, Sweden and Norway (RYDÉN, 1954) and from England (SPENCER, 1954). I reared imagines of this species from the leaves of *Ranunculus repens* L. and *R. lanuginosus* L. collected in the Kampinos Forest in 1955—56.

In the larval instar, *Ph. ranunculivora* HER. and *Ph. campanariae* sp. n. exhibit marked morphological (cf. DE MEIJERE, 1938, p. 92) and ecological differences. Examination of the male copulatory organs proved the two species to belong to two entirely distinct groups [fig. 5 and 6] and there can be no question of a closer relationship.

According to Professor E. M. HERING¹ the species closest to *Ph. campanariae* sp. n. seems to be *Ph. clematidicaulis* HER. which was recently reared from the stem of *Clematis* L., and a description of which he is preparing.

Hitherto, only one Agromyzid species mining the leaves of *Pulsatilla* MILL., namely *Phytomyza rectae pulsatillae* HER. has been studied. It was described by HERING (1924) under the name *Ph. pulsatillae* HER. HENDEL (1935), however, considered it as conspecific with *Ph. rectae* HEND. feeding on *Clematis recta* L., similarly to the form *Ph. hoppiana* HER. feeding on *Clematis* (*Atragene*) *alpina* L. In connection

¹ I wish to express my special thanks to Professor Dr. Erich Martin HERING, who was kind enough to read the first manuscript of this paper.

with HENDEL'S viewpoint, HERING (1935—1936) recognized *Ph. rectae* HEND. as an oligophagous species including three subspecies, one of which, *Ph. rectae pulsatillae* HER., occurs on *Pulsatilla* MILL. The latter plant proved to be also a host of two further species of the family Agromyzidae, namely of *Ph.*

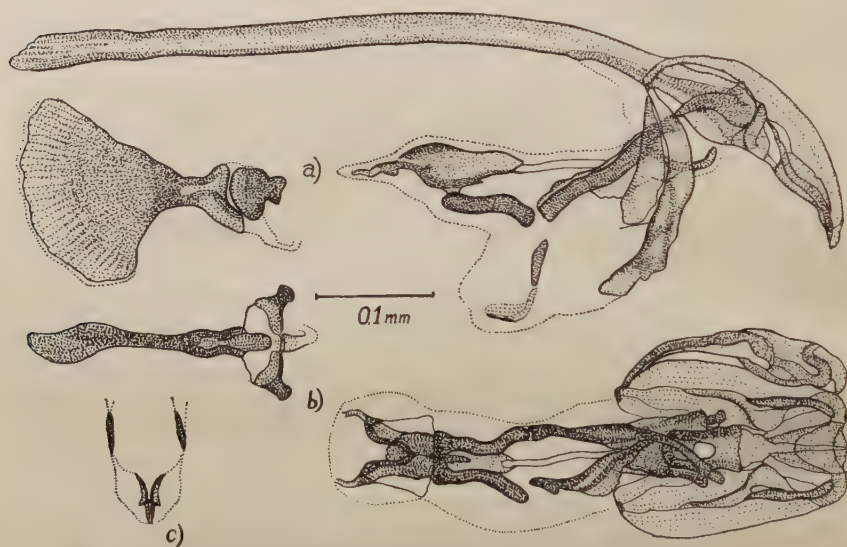


Fig. 5. *Phytomyza campanariae* sp. n. Male genitalia: a) from the side, b) from below, without aedeagal apodeme, right postgonite and hypophallus, 6) hypophallus from behind.

nigritella ZETT. and *Ph. nigricoxa* HEND., the larvae of which were found in the hypanthium, fruits and stem (HERING, 1944).

Ph. rectae HEND. is known from Central and Northern Europe from xerothermic and mountain regions (HENDEL, 1935). The form *Ph. rectae pulsatillae* HER. was found on *Pulsatilla alpina* (L.) SCHRK. in the Karkonosze Mountains (Riesengebirge — a part of the Sudety range, DE MEIJERE, 1937, leg. BUHR, 1934) and on *P. pratensis* (L.) MILL. in Bieleńek on the Odra river (HERING, 1927) and in the island of Wolin (HERING, 1933; NOWAKOWSKI, 1954). In the Kampinos Forest in 1954—1956 I collected its numerous mines on *P. pratensis* (L.) MILL. and *P. patens* (L.) MILL. and I bred imagines

from the first host. Moreover, I found the mine of *Ph. rectae hoppiana* HER. on *Clematis alpina* L. in the Tatry Mountains in 1953.

The mines of *Ph. rectae pulsatillae* HER. and *Ph. campanariae* sp. n. are completely different. The first species produces a linear

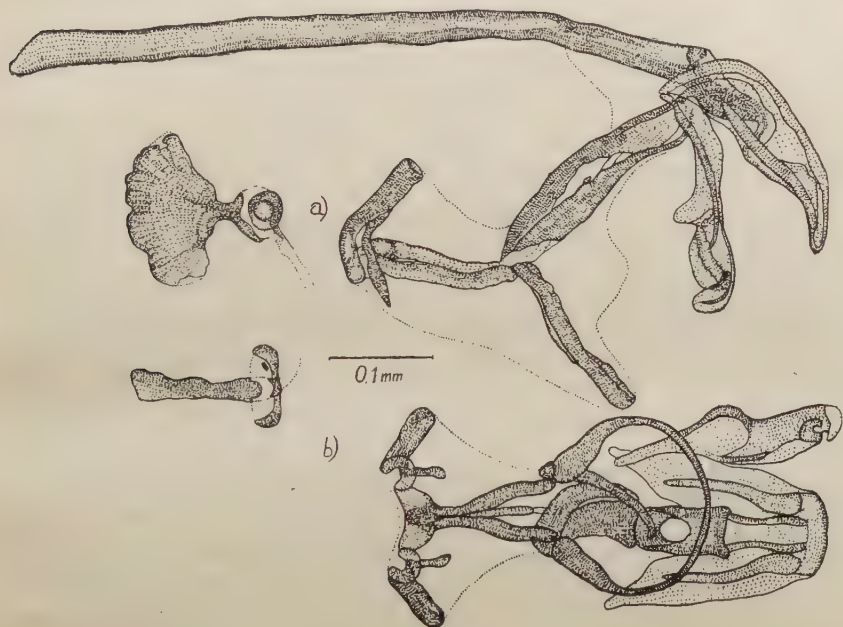


Fig. 6. *Phytomyza ranunculivora* HER. Male genitalia: a) from the side, b) from below, without aedeagal apodeme and right postgonite.

mine (ophionome) with indistinct primary feeding tracks. The grains of frass form an undulating, occasionally interrupted line. The mine is yellowish-green, occasionally with a brown central streak. The second species, on the other hand, produces a blister-like orthogenous blotch mine (physonome) with distinct primary feeding tracks. The mine is dirty green and turns brown when dry, the grains of frass are dispersed irregularly in the mine cavity [fig. 4].

Such notable differences in the mode of feeding of the larvae of the two forms occurring simultaneously on the same host plants show definitely that the forms are distinct species.

Morphological differences between the larvae and imagines provide further evidence supporting this view.

The larva of *Ph. rectae pulsatillae* HER. which was described by DE MEIJERE (1928, p. 174; 1937, p. 228) is known to me as well. It is smaller and more slender than the larva of *Ph. campanariae* sp. n. and more yellow with an orange tinge. Its creeping welts are narrower. The spiracles are quite similar — an example of convergence. The external differences between the imagines may be summarized as follows:

<i>Ph. rectae pulsatillae</i> HER.	<i>Ph. campanariae</i> sp. n.
Width of frons considerably exceeds its length measured from <i>vti</i> to the antennal base.	Width and length of frons about equal.
Posterior <i>ors</i> present.	Posterior <i>ors</i> absent.
Anterior <i>ors</i> retroflexed and bent inwards, inserted before the middle of the distance between <i>vti</i> and the antennal base.	Anterior <i>ors</i> retroflexed, inserted in or just behind the middle of the distance between <i>vti</i> and the antennal base.
Fourth <i>dc</i> at the level of <i>prs</i> .	Fourth <i>dc</i> before <i>prs</i> .
Mesonotum and scutellum pitchy black, shiny.	Mesonotum and scutellum dull black with a dense grey suffusion.
Basal joint of the oviscapt dorsally dull over $\frac{1}{3}$ of its length from the basis.	Basal joint of the oviscapt dorsally dull over almost half of its length from the basis.
Squamal fringe brown.	Squamal fringe yellow.

The malegenitalia of *Ph. rectae pulsatillae* HER. are completely different than those of *P. campanariae* sp. n. and very similar to *Ph. ranunculivora* HER.

The specific distinctness of *Ph. campanariae* sp. n. from *Ph. narcissiflorae* HER. was not proved beforehand by biotic characters. The larvae of the two mining flies feed in a similar manner on different though closely related host plants growing in different environments. *Pulsatilla pratensis* (L.) MILL. and *P. patens* (L.) MILL. are lowland plants. The first species is of an Eurosiberian distribution, the second of a Holarctic, also occurring in the lower mountain regions. *Anemone narcissiflora* L., on the other hand, is an Alpine plant of a Holarctic distribution.

Hitherto, *Ph. narcissiflorae* HER. is known only from the Swiss Alps where it was found by HERING in 1928.

According to the description of the larva of *Ph. narcissiflorae* HER. given by DE MELJERE (1934, p. 286; 1938, p. 92) it has more spiracular bulbs than the larva of *Ph. campanariae* sp. n. The puparia differ as well in their size and coloration. The differences between the imagines can be summarized as follows:

Ph. narcissiflorae HER.

Lunula lower than a semicircle, its height being more or less equal to half the height of the part of the frons above it up to the anterior ocellus.

Posterior *ors* present.

Posterior *ori* closer to the anterior *ors* than to the anterior *ori*.

Third antennal joint circular.

Second section of costa (*c*) more than 2,5 times longer than the fourth.

*r*₄₊₅ also terminally straight.

Squamal border and fringe brown.

Ph. campanariae sp. n.

Lunula higher than a semicircle, exceeding the height of the part of the frons above it up to the anterior ocellus.

Posterior *ors* absent.

Posterior *ori* closer to the anterior *ori* than to the anterior *ors*.

Third antennal joint rounded quadratic.

Second section of costa (*c*) less than twice as long as the fourth [fig. 2.].

*r*₄₊₅ at the end curved antroorsally.

Squamal fringe yellow.

The morphological differences between the two forms are thus sufficiently distinct in all known stages of their life cycle to justify the recognition of *Ph. campanariae* sp. n. as a separate species. This fact appears to dispel the last suspicion of the existence of miners common to both *Anemone* L., s. str. and *Pulsatilla* MILL. and, consequently, supports the view that the two groups of plant species are generically distinct. HERING (1951), accepting the widest concept of the genus *Anemone* L., considers the food specialization of its parasites as a monophagy of the second degree, i. e. the feeding of one insect species on one plant subgenus. However, as the mining insects restricted with regard to food to the family *Ranunculaceae* favour monophagy of the third degree, i. e. the feeding of one insect species usually on one plant genus, the miners of *Anemone* L., s. l. should not constitute an exception in this respect.

Chaetotaxy

<i>acr</i> — acrostichalis	<i>oc</i> — ocellaris
<i>dc</i> — dorsocentralis	<i>ori</i> — orbitalis inferior
<i>e. pa</i> — postalaris exterior	<i>ors</i> — orbitalis superior
<i>ia</i> — interalaris	<i>prs</i> — presuturalis
<i>i. pa</i> — postalaris interior	<i>vi</i> — vibrissa
	<i>vti</i> — verticalis interior

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STRESZCZENIE

Autor podaje opis nowego gatunku — *Phytomyza campanariae* sp. n., którego larwy minują liście sasaneek — *Pulsatilla pratensis* (L.) MILL. i *P. patens* (L.) MILL. Miny i larwy, z których wyhodowano postacie dorosłe, zostały zebrane w Puszczy Kampinoskiej w latach 1955—56 podczas badań nad fauną i ekologią *Agromyzidae*. Opis obejmuje zewnętrzną morfologię imago (♂ i ♀), genitalia ♂, larwę i puparium oraz biologię i ekologię gatunku łącznie z wymienieniem środowisk roślin żywicielskich.

Autor porównuje *Ph. campanariae* sp. n. z gatunkiem, przy którym stoi ona najbliżej według klucza (*Phytomyza ranunculivora* HER.), z gatunkiem żerującym w sposób odmienny w tych samych roślinach (*Ph. rectae pulsatillae* HER.) oraz z gatunkiem żerującym w sposób podobny w roślinie blisko spokrewnionej (*Ph. narcissiflorae* HER.). Stwierdzenie odrębności gatunkowej *Ph. campanariae* sp. n. od *Ph. narcissiflorae* HER. usuwa ostatnią wątpliwość co do braku wśród owadów minujących pasożytów wspólnych dla *Anemone* L., s. str. i *Pulsatilla* MILL., a tym samym skłania autora do poparcia koncepcji odrębności rodzajowej tych dwu grup gatunków roślin.

РЕЗЮМЕ

Автор описывает новый вид — *Phytomyza campanariae* sp. n., которого личинки минируют листья *Pulsatilla pratensis* (L.) MILL. и *P. patens* (L.) MILL. Миновые повреждения и личинки, из которых выращены взрослые особи, собраны

в Кампиноесской Пуще в годах 1955—1956, при исследовании фауны и экологии *Agromyzidae*. Описание берет во внимание внешнюю морфологию имаго (♂ и ♀), гениталии ♂, личинку и пупариум, а также экологию вида вместе с указанием среды кормовых растений.

Автор сравнивает *Ph. campanariae* sp. n. с видом, с которым она более сближена по определителю (*Ph. ranunculivora* HER.), с видом минирующим другим образом те же самые растения (*Ph. rectae pulsatillae* HER.) и с видом минирующим подобным образом растение близко родственное (*Ph. narcissiflorae* HER.). Констатирование видовой обособленности *Ph. campanariae* sp. n. от *Ph. narcissiflorae* HER. устраняет последнее сомнение относительно отсутствия среди минирующих насекомых паразитов общих для *Anemone* L., s. str. и *Pulsatilla* MILL. и таким образом склоняет автора к поддержке мнения о родовой обособленности этих двух групп растительных видов.

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